

A RECONSTRUCTION OF THE KANGAROO ISLAND EMU (*DROMAIUS DIEMENIANUS*)

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Plates xxiv-xxv and Text Fig. 1-10.

FOLLOWING a suggestion from the Board of Governors of the South Australian Museum, the writer attempted a reconstruction of the extinct emu from Kangaroo Island, South Australia, as it appeared in life. This paper describes the methods used in the preparation of the specimen and does not draw comparisons from an ornithological viewpoint; these have been dealt with adequately by Morgan and Sutton (1927-28).

The only feathered specimen of *Dromaius diemenianus* known to be preserved is in the Museum National d'Histoire Naturelle, Paris; this was mounted many years ago. Skeletal material housed in the South Australian Museum is sufficient to gain a knowledge of the general proportions of the Kangaroo Island bird, but details of the type and texture of the feathers are known only from the unique Paris specimen; we are indebted to the Director of the Muséum National d'Histoire Naturelle for photographs of this example. They suggest that the feathers of *Dromaius diemenianus* are relatively wider than in the mainland *Dromaius novae-hollandiae*; it should be noted that feathers of *Dromaius novae-hollandiae* were used for the reconstruction. The form and size of the model were based on a complete skeleton in the South Australian Museum (Reg. No. B6814).

In beginning the reconstruction a full-sized drawing of the bones in their relative positions was made; with this as a guide, leg-irons three-eighths of an inch in diameter were bent and threaded, and a centre board of seven-eighths of an inch pine was cut to outline the body. A three dimensional metal template of the skull (fig. 1-2) attached to a piece of three-quarters by one-eighth inch mild steel constituted the neck assembly. This was screwed to the top of the centre board, and was easily detachable during subsequent moulding and casting operations.

The head and neck were modelled in plasticine (fig. 3) over the metal template; glass eyes were placed in position in order to ensure subsequently accurate fitting in the plastic reproduction. Plasticine also served for modelling the feet and legs, the scales being made to conform as closely as possible in number to the Paris specimen.

Next, using the ribs as a pattern, wooden forms were cut on a band saw and screwed to the centre board; the leg irons were bolted to metal brackets to act as the pelvic assembly. Although the original bones were used in the laying out of the drawing and for frequent measurement checks, the valuable skeletal material was not used in the construction of the manikin.

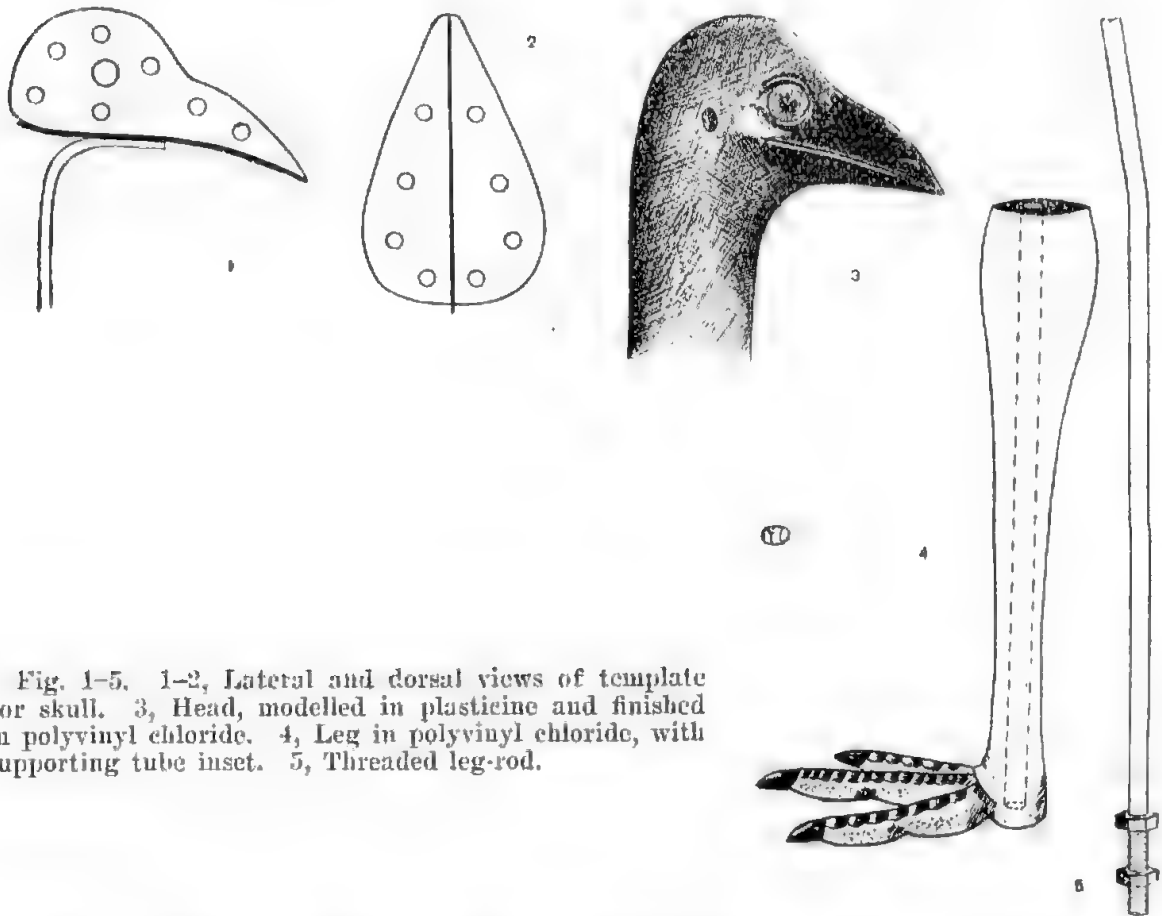


Fig. 1-5. 1-2, Lateral and dorsal views of template for skull. 3, Head, modelled in plasticine and finished in polyvinyl chloride. 4, Leg in polyvinyl chloride, with supporting tube inset. 5, Threaded leg-rod.

Fig. 6 shows the framework before the material representing muscular tissue was applied; this consisted of wood-wool (or "excelsior") laced on and covered with hessian (burlap) and plaster, to serve as a base for the final modelling in clay of muscular detail.

The next step was the moulding of the model. The head and neck assembly was detached for separate moulding; the exposed portions of the legs were not attached to the body and so presented no difficulties in moulding. The body mould was prepared in three pieces (fig. 7-8) using clay walls to demarcate sections; plaster reinforced with burlap was used for this portion of the work. The head was moulded in two pieces (fig. 9) using "Greenstone" plaster. Each leg mould consisted of two elongate pieces, plus a third piece for the sole of the foot; again "Greenstone" plaster was used.

Polyvinyl chloride was employed in reproducing the head and legs as casts. As this is normally a soft material, an internal support was made for the legs, allowing the last-named to slide over the three-eighths of an inch leg irons attached to the body. This was accomplished by the use of seamless steel tubing with an internal diameter large enough to slide over the rods. After the steel tubes were placed in the leg mould the latter was filled with Polyvinyl chloride and then cured; Fig 4 is a diagrammatic sketch of the leg with the steel tube in place preparatory to the insertion in it of the leg rod (Fig. 5).

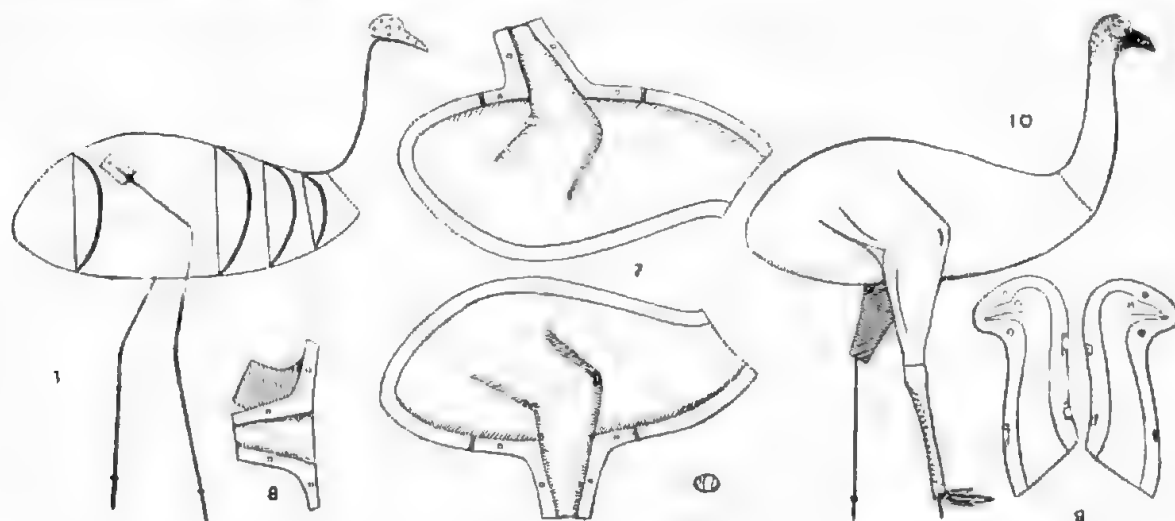


Fig. 6-10. 6, Armature of body ready to receive woodwool. 7, Two halves of the plaster body mould. 8, Ventral section of body mould including inner halves of legs. 9, Mould of head and neck. 10, Completed manikin, without one of the plastic legs (added by removing the nut on the leg iron, slipping on the leg, and replacing the nut).

The high curing temperature of Polyvinyl chloride (160° C.) necessitated the use of "Greenstone" plaster because of its better heat resisting properties.

The glass eyes were removed from the plasticine model of the head and neck; "Greenstone" plaster replicas made from the eyes were then fastened to the mould with celluloid cement in their correct positions. The head was reproduced in Polyvinyl chloride by the flow casting method, which resulted in a hollow replica; the cavity of the last-named was then filled with plaster, using the original three-quarter inch by one-eighth inch neck iron as reinforcement, and as a means of firmly attaching the neck to the body. When the mould was removed the plaster eyes were readily detached and were replaced by the glass ones.

The body was reproduced in papier maché using strips of soft paper and flour paste, backed with heavier paper.

After drying and removal from the mould the three body sections were trimmed and assembled over the centre board and leg irons, cemented together

and finally completely coated with glue and whiting paste; this last operation rendered the body rigid and strong. The manikin (fig. 10) was completed by fixing the head and feet to the body.

According to literature, the plumage of *Dromaius diemenianus* was somewhat darker in colour than is usual in *Dromaius novae-hollandiae*; therefore, a blackish bird was collected by the writer from the Cooks Plains area in South Australia. The skin of this specimen, after trimming and cutting was attached to the body with paste, nails being used to hold the skin while it dried. The skin was extended on the head only as far as the mandibles; the horn-like mandible was represented by the suitably painted plastic, and the same treatment was accorded to the feet and legs up to the line of the leg feathers.

Plate xxiv shows three views of the completed reconstruction and Plate xxv shows close-up views of the head and feet.

SUMMARY.

An attempt has been made to reconstruct the extinct Kangaroo Island Emu (*Dromaius diemenianus*). The proportions are based upon a skeleton (Reg. No. B6814, South Australian Museum) and the plumage gives the approximate appearance of the bird during life.

ACKNOWLEDGMENTS.

I wish to thank Sir James Gosse, at whose instigation this reconstruction was attempted, and the Museum Director (Mr. H. M. Hale) for his co-operation on the project; also the Director of the Museum National d'Histoire Naturelle, Paris, for the photographs of the only mounted specimen extant.

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